

SEALANT DISPENSING CORRECTION METHOD

RELATED APPLICATIONS

This application is a continuation-in-part of US Application serial number
5 60/159,141, filed October 13, 1999.

BACKGROUND OF THE INVENTION

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00667896-404200
10 Apparatus for dispensing sealants and adhesives and similar materials robotically
are well known and typified by U.S. Patent No. 5,847,285 (the contents of which are
incorporated by reference) and the patents referenced and cited therein.

SUMMARY OF THE INVENTION

15 In summary, the method of the instant invention forms a calibrated relationship
between pressure and flow rate. The invention as described herein can be utilized in
products such as Graco's PrecisionFlo™ dispenser as a software modification. Pressure is
measured with a transducer device which provides a 1 to 5 volt output which corresponds
to 0 to 3500 PSI. The voltage is converted to a pulse width using an external analog to
digital device. Flow rate is measured with a helical type flow meter which provides a
pulse corresponding to a calibrated volume passing through it.

The relationship is discovered by dispensing an amount of material and measuring the pressure and flow rate, adjusting the pressure until a user specified flow rate (typically the max flow rate) is achieved within a tolerance. This process is then repeated eight (8) times and a mean pressure to flow rate relationship is established and recorded. The set
5 point for the device is then assumed to be a linear function with the calibrated point as the maximum value and 0,0 is the minimum value.

As the command signal to the unit is modified (for dispensing sealant at a percentage of maximum, e.g. if calibrated at 500 cc/min., a half range signal would represent a 250 cc/min. command) the pressure range for the calibrated point is either
10 extrapolated or interpolated as necessary in order to achieve the correct flow rate. As a result, each time the unit dispenses, it is also recalibrated. This method provides immediate correction for changes in system fluid dynamics thus allowing for a more consistent and predictable dispense profile.

In the preferred embodiment of the instant invention, where the example
15 aforementioned has the max flow rate of 500 cc/min., a half scale level of 250 cc/min. is utilized. The response curve is divided into two segments above and below the median speed dip (half flow rate point) and the slope of the straight line is adjusted accordingly.

These and other objects and advantages of the invention will appear more fully from the following description made in conjunction with the accompanying drawings
20 wherein like reference characters refer to the same or similar parts throughout the several views.

A BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows the pressure/flow table as initially established and after adjustment.

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DESCRIPTION OF THE PREFERRED EMBODIMENT

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10 For example, in Figure 1, slope B represents the initial calibration while slopes A and C
represent corrected linear relationships.

It is contemplated that various changes and modifications may be made to the
dispensing correction method without departing from the spirit and scope of the invention
as defined by the following claims.